DOCUMENT RESUME

ED 403 447 CE 073 332

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TITLE Redefining Competency from a Systems Perspective for the 21st Century.
PUB DATE 31 Oct 96
NOTE 15p.; Paper presented at the Annual Meeting of the American Association for Adult and Continuing Education (Charlotte, NC, October 31, 1996).
PUB TYPE Speeches/Conference Papers (150) -- Viewpoints (Opinion/Position Papers, Essays, etc.) (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Competence; *Job Skills; Lifelong Learning; Performance; *Personnel Evaluation; Problem Solving; *Professional Continuing Education; Professional Occupations; Student Evaluation; *Systems Approach

ABSTRACT

Describing competency only in terms of individuals' technical capabilities is fast becoming inadequate. Practitioners in the 21st century must be able to apply the technical capabilities of their professions as they work with others within and external to their professions. A perception of the professional as a package of capabilities is the result of a problem-solving approach to professional practice that has evolved over the past decade. As professional practice moves toward a systems orientation, the factors that define competency increase in number and complexity. Both situational and human factors must be addressed in defining competency. Education and testing for competency should focus on professionals' work in teams as well as on their individual competencies. The need to introduce a team focus into professional preparation does not diminish the importance of fully preparing each individual with regard to the knowledge, skills, and performance abilities essential to the profession he or she is about to enter. As competency moves from an individual to a systems perspective, one can expect a parallel movement from an individual to an organizational competency focus. The lists of competencies that organizations identify as essential will increasingly include human factors. (YLB)

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ED 403 447

Redefining Competency from a Systems Perspective for the 21st Century

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Presentation to the American Association for Adult and Continuing Education

October 31, 1996 - Charlotte, North Carolina

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Continuing professional* education, providing lifelong updating and learning for practitioners across a broad range of professions and occupations, has become an increasingly major portion of continuing higher education's mission. As education and training dollars have become more scarce, and professionals and their employers have become more astute consumers of education, the expectation that continuing professional education will be directly related to competency in practice has risen.

To some extent, competency has been a major concern across professions for several decades. Issues of defining, maintaining, and ensuring levels of competent practice have been debated and addressed by educators and trainers, government officials, employers, professional associations, the public, and professional practitioners themselves. As the 21st Century approaches, however, these issues are growing more complex.

Before looking ahead to the future of competency, definition of the traditional view of competency is in order to provide a common base of understanding. Traditionally competency has been individual-specific, based on the individual practitioner. This focus is apparent in existing credentialing systems, virtually all of which credential individual practitioners (e.g., Certified Public Accountants, Registered Dietitians). Traditional competency is viewed as having three components: *knowledge, skills,* and *performance abilities*. *Knowledge* consists of the body of information that a practitioner of a specific

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* In this context, the terms *profession* and *professional* have been used quite broadly to describe a wide range of occupational categories, rather than in the more narrow sense of traditional professions such as medicine and law.

profession is expected to master. *Skills* enable a practitioner to use that knowledge to perform certain tasks. *Performance abilities* refer to the application of knowledge and skills in the practice setting, incorporating judgment to deal with actual situations. Within any given field, these components can be viewed as the technical capabilities of that profession.

An example might clarify the components of this traditional view of competency. In the case of an architect, *knowledge* of design principles and space requirements for activities of daily living is expected. The competent architect also is expected to have the *skills* to apply this knowledge to the design of functional buildings. Further, he or she needs to have the *performance abilities* to use the knowledge and skills in a practice setting. These abilities can include accommodation of financial constraints, consideration of the design's appropriateness for the client or audience to be served, and awareness of local building codes and zoning regulations.

In addition to these technical capabilities, individual competency also has context, a factor that has received too little consideration in the past. In order to be a competent practitioner, a professional must be able to employ knowledge, skills, and performance abilities within a specific context, or practice setting. The context for individual practice includes the *practice setting, other professionals,* and *relevant conditions.* The *practice setting* is the facility, institution, or other place in which the professional performs the duties of practice. For a judge the practice setting usually is a courtroom, and for an emergency medical technician it may be an ambulance, a restaurant, the highway scene of an accident, or any place a patient is found. Every practitioner works, at least to some extent, with *other professionals*, and hence must be able to communicate and interact effectively with them. For example, in a health care setting physicians, therapists, nurses, dietitians, and a host of others rely

on each other to care for patients. *Relevant conditions* may vary greatly from the ideal conditions on which professional education and training are based. For example, the elementary teacher may find that several students are so distracted by events in their personal lives that they arrive at school unable to focus on learning, requiring the teacher to address their needs before proceeding with the day's lesson.

The Changing Nature of Professional Practice

Context of Practice

As the 21st century approaches, the importance of the context of individual practice is increasing. Correspondingly, description of competency only in terms of individuals' technical capabilities is fast becoming inadequate. These changes have multiple causes. First, the numbers of professionals engaged in solo practice has dwindled dramatically. Physicians increasingly work in group practices or health maintenance organizations, and architects and accountants join firms with several or even several hundred colleagues. Second, as professionals are called upon to solve more complex problems, interdisciplinary practice is becoming more common. For example, it is not uncommon for a team comprised of one or more physicians, nurses, dietitians, social workers, clergy persons, and lawyers to join forces in treating an AIDS patient. Third, professionals are becoming more specialized as disciplines become more narrowly defined. Whereas at one time orthopedic surgeons could be counted on to handle injuries and disorders of the entire skeletal system, for example, today many of them limit their practices to hands, backs, or other anatomical parts.

All of these factors heighten the importance of the context in which professionals practice. Rather than operating in relative isolation, relying primarily on their own technical capabilities, today's professionals are finding that they must be able to function effectively within the context of their daily work, to work with others as part of a system, or team. Competency as traditionally defined in terms of knowledge, skills, and performance abilities remains necessary but is no longer is sufficient to ensure a professional's ability to perform competently. Practitioners in the 21st Century must be able to apply the technical capabilities of their professions as they work with others within and external to their professions.

The Nature of Jobs

With changes in the context of practice has come a corresponding change in the nature of jobs themselves. Long and Vickers-Koch (1995) suggest that a professional no longer is seen as a *job holder,* but rather is viewed as a *package of capabilities*. For example, the engineer who understands why things break--fracture and fatigue, stress and strain--may apply that expertise to determining why an extension ladder broke one day, use it to help design a windmill blade another day, and yet another day may rely on it to determine why a gear tooth isn't holding up properly.

This perception of the professional as a package of capabilities is the result of a problem-solving approach to professional practice that has evolved over the past decade or so. Increasingly professional practice is seen as a series of problems to be solved, or projects to be handled. As each problem is defined, those people with primary responsibility for coordinating it seek the various types of expertise that are needed to address it. They may draw on a number of different people to obtain all the capabilities and competencies that are required.

Conversely, each professional may be drawn into a number of different projects as the package of capabilities that he or she represents is needed. Thus professionals coalesce into teams, working with those teams until a particular problem is solved and then regrouping into other teams. A professional may be involved with a dozen or more teams at any given time, working with different practitioners representing different professions on each of them.

This emphasis on teams is quite relevant to the evolution of the continuous quality concept during the past decade. Rather than being considered a result of the quality movement, however, the team approach to professional practice is more appropriately viewed as an instigator of the team concept that is so central to quality management. The quality movement has evolved, at least in part, because professional practice now relies heavily on a team approach to problem solving.

Another factor contributing to the changing nature of jobs has been technology. Certainly technology makes more things possible in most, if not all, professions. For example, computerization and miniaturization have resulted in many types of microsurgery that were unheard of until recent years. Technology also changes the ways in which professionals practice. With copiers and word processing came the dismissal of carbon paper and totally retyped reports. Architects no longer spend hours at the drafting table, but rather use computer-assisted design to develop building plans. This heavy reliance on technology that characterizes most professions has substantial implications for professionals' daily practice.

The problem-solving approach to practice usually requires teamwork, since no one professional can be expected to have all of the expertise required to address most problems. Stewart (1995) suggests that this approach can be thought of as having four steps. The first, *conceiving and defining the project*, is

in many ways the most difficult; professionals' failure to adequately define the problems of their practice is a major contributor to lack of competency. For example, an occupational therapist may be faced with helping a patient regain daily living skills. All too often the therapist is likely to define the problem too narrowly, such as "helping the patient regain use of the left arm." In reality, regained use of the limb may or may not be possible, but the therapist must forge ahead to help the patient to handle daily living skills, whether with the use of the limb or by developing compensating strategies. Other steps in Stewart's problem-solving approach include *planning the project*, or developing a strategy for its solution; *implementing the plan,* and *completing and evaluating the entire problem-solving project.*

Components of Competency

As professional practice moves toward a systems orientation, the factors that define competency increase in number and complexity. Certainly sufficient knowledge, skills, and performance abilities will continue to be major contributors to competency. However, as professional practice increasingly becomes a team, rather than an individual, phenomenon, it is quite possible for a professional to have strong technical capabilities, yet not demonstrate competency in daily practice.

Situational factors play an important role. Professionals may have all of the technical capabilities needed to perform competently, but may fail to do so in certain situations. One situational factor is the *practice setting* itself. Professionals' practice setting can negatively affect their competency in two ways. First, the professional may exhibit weaknesses in adapting properly to a practice setting. The journalist who is accustomed to preparing news stories in

an isolated environment may find it impossible to concentrate in a crowded newsroom, or the accountant used to the flexibility of a small firm may find the formality, strict rules, and impersonality of a large accounting firm overwhelming. The second way in which practice setting can contribute to practitioner incompetence is by not providing a supportive environment for that practitioner. For example, when nurses were taught a new method of conducting and recording patient assessments, they quickly found that their employing hospitals were not receptive to use of the new methodology, which in fact would have improved their competency in conducting assessments.

The second situational factor with potential to diminish practitioner competency is *relevant conditions*. Professionals usually learn about practice under fairly ideal conditions. Dietitians generally are taught to work with diabetic patients who speak their language; can read; have somewhat supportive, or at least neutral, home environments; and have most, if not all, of their senses. In reality, a dietitian may be confronted with a diabetic patient who speaks another language, is hearing or sight impaired, lacks necessary refrigeration at home, or must contend with one or more other detracting factors. The competent dietitian must be able to teach the diabetic patient good nutritional habits in spite of these obstacles.

In addition, *human factors* can contribute heavily to practitioner incompetence. The professional who can perform competently as a solo practitioner may perform incompetently when required to interact with colleagues or with clients, customers, or patients. *Communication* has become a key component of competency. As professionals work in teams it is essential that they be able to talk comfortably with one another and with those they serve. Patience, tact, listening skills, understanding others' needs for information, and consideration of others' sensitivities and concerns are among the characteristics

necessary for successful communication. *Problem-solving* skills also are required for competent practice, for practitioners must be able to determine when and how they can best apply their technical capabilities to solve the problems confronting them. Within each problem-solving team at least some members must have strong *leadership* skills. A team of engineers in which no one is able to exert leadership may never reach the point of defining their problem, let alone develop a strategy for solving it. A number of other human factors, such as *standardized language*, *realism*, and *practicality*, also can be important components of competency.

Educating and Testing for Competency

Educating and testing for competency historically have been focused on the individual, and usually have been removed from the practice context. There are good reasons for this focus. The individual practitioner has been the unit for most, if not all, credentialing, so preparation and assessment at the individual level have been quite reasonable. Educating, and particularly evaluating, individuals is more manageable at an individual than at a group level. And the sound measurement of individual knowledge, skills, and even performance abilities is somewhat easier with individuals than with groups.

However, in light of the changing character of professional practice, this focus on the individual's technical capabilities is no longer sufficient. When an individual is determined to be incompetent, reinforcement or strengthening of technical capabilities often does not provide sufficient remediation. With the recognition that competency is not context-free comes the realization that situational and human factors also must be addressed in defining competency. Both education and testing for competency will need to focus on professionals'

work in teams, as well as on their individual capabilities. This new focus is not simply on the individual's ability to work on a team or in a practice context, but rather on teams' problem solving competency.

Certainly basic technical capabilities of a given profession are necessary for competent practice. The Realtor will always need a basic understanding of home financing and the laws governing real estate transfers, for example, and the market researcher will need expertise in areas including sampling, statistics, and demographics. These profession-specific capabilities that practitioners bring to problem-solving teams form the basis for groups' work. However, behavioral aspects must be added to these capabilities if competency is to result. Human factors training is fast becoming a critical component of professionals' preparation for practice, continuing education, and competency assessment. Similarly, professionals must learn and be evaluated on their ability to approach practice from a cross-functional perspective, to work on project teams with colleagues from a range of professions and practice settings.

When professionals work in teams, they engage in a form of collaboration. Collaboration involves relinquishing some autonomy and sharing both responsibility and authority with other team members. These concessions may not come easily to practitioners who have been prepared without adequate attention to the practice context, or who are accustomed to operating somewhat autonomously. As team members, professionals also must have enough confidence in their colleagues to rely on, and build on, the expertise that those colleagues bring to the group.

Educational Issues

The need to introduce a team focus into professional preparation does not diminish the importance of fully preparing each individual with regard to the

knowledge, skills, and performance abilities essential to the profession he or she is about to enter. Team and individual foci are complementary, not mutually exclusive, and both are needed.

However, the importance of a practice orientation to professional work cannot be overemphasized. All of the knowledge, skills, and performance abilities, superbly mastered, cannot save the day if the professionals possessing them cannot interact well enough to define and solve the problems with which they are presented. In a sobering example, Taggart (1995) noted that in a series of airline accidents, individual pilots' performances were totally competent; the accidents were due to crews' failures in the areas of communication, leadership, and situational awareness. This type of problem can be addressed only through practice-oriented education and training that relies on real or simulated practice settings to prepare professionals. Experiential learning, that which takes place in an actual practice setting, can be a highly valuable component of both preprofessional and continuing professional education.

Assessment Issues

In evaluating competency, as well as in educating for competency, individual and team foci can complement one another. Both are necessary if competency is to be adequately assessed.

Typically, competency assessment has been based on pass/fail scores, so that an individual scoring 69 on an evaluation measure would fail and be deemed incompetent, for example, whereas another individual, scoring 70, would pass and be declared competent. Never a highly defensible practice, this strict cut-off is even less adequate when applied to the systems perspective of competency. A system that defines degrees of competency, acknowledging areas of strength and weakness, will permit individuals and groups to concentrate on

improvement of weak areas while building on their strengths. The costs of incompetence have become too high, in terms of both the results of incompetent practice and the numbers of people involved in problem solving teams, to allow it to go unchecked.

The specific methods and instruments used to assess competency are critical to valid competency assurance. Any assessment has to be based on measurable factors that can be documented with a checklist or other recording format. In the past, human factors testing has been criticized for being too subjective, and this frequently has been a justifiable criticism. Human factors cannot be evaluated at the level of broad concepts such as communications skills or leadership ability. Rather, these concepts must be broken down to specific, measurable behaviors. For example, in assessing a clinical psychologist's communications skills, one question might be, "Did the psychologist put the patient at ease before proceeding with the interview?" This is a measurable component, to which the answer might be yes, no, or somewhat.

Organizational Competency

As competency moves from an individual to a systems perspective, one can expect a parallel movement from an individual to an organizational competency focus. Competency is becoming a component of many organizations' long-range plans. In strategic planning, these organizations identify the competencies they will need to carry out their missions and goals, determining which of those competencies they currently possess and which they will need to acquire. More and more, these lists include human factors as well as technical capabilities.

Long and Vickers-Koch (1995) suggest that organizational competencies are of four types. *Support competencies* are those that relate to the internal

workings of an organization, such as human resources, and make it possible for an organization's day-to-day operations to run smoothly. *Technical competencies* are those related to the field of endeavor of an organization, be they knowledge of fibers and weaving for a textile manufacturing company or design, cost control, and project management capabilities for an architectural firm. *Competitive competencies* enable an organization to compete successfully with other organizations in their field, helping them to distinguish their work or identify a specific market niche. Finally, *cutting edge competencies* prepare an organization to move into the future, to keep up with changing needs, technologies, and other economic, social, and environmental factors.

Conclusion

A systems perspective on competency requires a true group approach to preprofessional and continuing professional education and training, as well as to competency assessment. Aspiring professionals' preparation and seasoned practitioners' updating must address not only technical capabilities, but also the capabilities required to function effectively as members of problem-solving teams.

For those involved in the initial and ongoing education and training of professionals, as well as for those concerned with competency assurance, the potential--and demand--for expanding their scope of activities is substantial. In addition to the traditionally addressed technical capabilities, human and situational factors merit attention. Behavioral and cross-professional capabilities represent a new breed of competencies, and group as well as individual performance may become a unit of assessment.

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